

WHAT IS CLAIMED IS:

- Sub a<sup>6</sup>*
1. A structural assembly comprising:  
a first pre-cured assembly; and  
a 3-D woven textile pre-form that is coupled to said first pre-cured  
5 assembly with a film adhesive, wherein said first pre-cured assemblies, said 3-D  
woven textile pre-form, and film adhesive are cured to form the structural  
assembly.
  2. The structural assembly of Claim 1 further comprising:  
10 at least one additional assembly wherein said at least one additional  
assembly is coupled and cured to said first pre-cured assembly and said 3-D  
woven textile preform with a film adhesive.
  3. The structural assembly of Claim 2, wherein ~~said at least one~~  
15 additional assembly is a metal assembly or a pre-cured assembly.
  4. The structural assembly of Claim 2, wherein said first pre-cured  
assembly and said at least one additional assembly are pre-cured laminated  
20 composite structures.
  5. The structural assembly of Claim 1, wherein said 3-D woven  
textile pre-form is impregnated with an uncured resin.
  - Sub a<sup>7</sup>*  
6. The structural assembly of Claim 2, wherein said first pre-cured  
25 assemblies, said 3-D woven textile pre-form, and film adhesive are cured in an  
autoclave with heat and pressure.
  7. The structural assembly of Claim 2, where said pressure is applied  
30 with a pressure intensifier located proximate to said pre-cured assemblies and  
said 3-D woven textile pre-form.

*Sub A* 8. The structural assembly of Claim 2, wherein said pre-assemblies, said 3-D woven textile pre-form, and film adhesive are cured with a low temperature vacuum bag.

5 9. The structural assembly of Claim 2, wherein said pre-assemblies, said 3-D woven textile pre-form, and film adhesive are cured with an E-Beam cure resin system.

10 10. The structure assembly of Claim 2, further comprising composite overwrap plies on the exterior surface of said 3-D woven textile pre-form.

11. The structural assembly of Claim 2, wherein said pressure intensifier comprises a flexible material that forces said 3-D woven textile against said first pre-cured assembly and said at least one additional assembly.

*Sub B* 12. The structural assembly of Claim 1, wherein said 3-D woven textile further comprises at least one fiber woven through critical intersection zones.

*Sub a<sup>9</sup>*  
13. A method of forming structural assemblies, comprising the steps of:

affixing a first adhesive film in between a first pre-cured assembly and a 3-D woven textile pre-form;

5 affixing an additional adhesive film between at least one additional pre-cured assembly and said 3-D woven textile; and

curing said adhesive films to form the structural assembly.

14. The method of Claim 13, wherein said 3-D woven textile pre-form is impregnated with an uncured resin.

*Sub D<sup>4</sup>*  
15. The method of Claim 13, wherein said first pre-cured assembly and said at least one additional pre-cured assembly are pre-cured, laminated composite structures.

*Sub a<sup>10</sup>*  
16. The method of Claim 14, wherein said step of curing said adhesive films, said 3-D woven textile pre-form, and film adhesive is implemented in an autoclave with heat and pressure.

20 17. The method of Claim 16, where said pressure is applied with a pressure intensifier located proximate to said pre-cured assemblies and said 3-D woven textile pre-form.

*Sub C<sup>3</sup>*  
18. The method of Claim 16, wherein said step of curing is implemented within a low temperature vacuum bag.

19. The method of Claim 16, wherein said step of curing is implemented with an E-Beam cure resin system.

30 20. The method of Claim 16, further comprising the step of applying composite overwrap plies on exterior surfaces of said 3-D woven textile pre-form.

Sub C  
Cont  
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21. The method of Claim 17, wherein said pressure intensifier comprises a flexible material that forces said 3-D woven textile against said first pre-cured assembly and said at least one additional pre-cured assembly.

Sub D  
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22. The method of Claim 21, wherein said flexible material is rubber.

Sub E  
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23. The method of Claim 13, wherein said 3-D woven textile further comprises at least one fiber woven through critical intersection zones.

Suba<sup>11</sup>

24. A method of forming structural assemblies with pre-cured laminated composite structures, comprising the steps of:

5 affixing a first adhesive film in between a first pre-cured laminated composite structures and a 3-D woven textile pre-form;

affixing an additional adhesive film between at least one additional pre-cured laminated composite structures and said 3-D woven textile; and

curing, with heat and/or pressure, said adhesive films, said first pre-cured laminated composite structures, said at least one additional pre-cured laminated composite structures and a 3-D woven textile pre-form to form the structural assemblies.

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25. The method of Claim 24, wherein said 3-D woven textile pre-form is impregnated with an uncured resin.

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15 Suba<sup>12</sup> 26. The method of Claim 25, where said pressure is applied with pressure intensifiers located proximate to said pre-cured laminated composite structures, and said 3-D woven textile pre-form.

20 Sub C8 27. The method of Claim 26, ~~wherein said step of curing is~~ implemented within a low temperature vacuum bag.

28. The method of Claim 26, wherein said step of curing is implemented with an E-Beam cure resin system.

25 Sub C9 29. The method of Claim 26, further comprising the step of applying composite overwrap plies on exterior surfaces of said 3-D woven textile pre-form.

30 30. The method of Claim 26, ~~wherein said pressure intensifier~~ comprises a flexible material that forces said 3-D woven textile pre-form against said first pre-cured laminated composite structures and said at least one additional pre-cured laminated composite structures.

~~31. The method of Claim 30, wherein said flexible material is rubber.~~

Sub C10 32. The method of Claim 24, wherein said ~~3-D woven textile pre-form~~  
further comprises at least one fiber woven through critical intersection zones.

add a<sup>13</sup>  
add to<sup>3</sup>

Add  
C14